JPRS 75687
13 May 1980

USSR Report

ENERGY

No. 10

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ELECTRIC POWER

MAKUKHIN ON PROGRESS, GOALS FOR 1980

Kiev ENERGETIKA I ELEKTRIFIKATSIYA in Russian No 1, Jan-Mar 80 pp 3-7

[Article by A. N. Makukhin, minister of energy and electrification of the Ukrainian SSR]

[Text] In the struggle for practical realization of the historic outlines of the 25th Congress of the CPSU, the working classes of the Soviet Union achieved great success in 1979 in realizing economic and social policies of the party, in strengthening the country's defense capability. As comrade L. I. Brezhnev, general secretary of the CPSU Central Committee, chairman of the Presidium of the USSR Supreme Soviet noted in his speech before the November (1979) Plenum of the CPSU Central Committee, these successes form an excellent foundation for resolving the national economic problems of 1980, for confident movement forward along the road toward construction of the material and technical base for communism.

A decisive condition for assuring high rates of development of the national economy, further enhancement of the material and cultural level of the Soviet nation is the smooth, leading evolution of energy. Because of the relentless concern of the Communist Party and the Sovet government about realizing the legacies of the great Lenin, electrification today holds a leading role in the implementation of technical progress in all sectors of the national economy.

By the beginning of 1980, the total installed capacity of electric power plants in the Soviet Union exceeded 255,000,000 kilowatts and was more than 1.5 times as great as the 1970 level. Generation of electrical energy in 1979 reached 1,239,000,000,000 kilowatt-hours and was 498,000,000 kiliowatt-hours (or 67 percent) higher than 1970. This increase in production alone is almost equal to the entire amount of electrical energy produced in the country in 1965.

A comparison like this also suggests the scales of Soviet electrical energy. In the past year the national economy of the country obtained 60,000,000,000 kilowatt-hours more electrical energy than was produced in 1978 by all nine members of the European Common market as a whole.

The USSR electrical network management is evolving rapidly. For transmission of electrical energy from the eastern regions to the European Russia there are

1150 kilovolt AC and 1500 kilovolt DC power transmission lines. The enormous problem of creating a USSR Unified Energy System has been solved. Its creation will permit more efficient utilization of energy equipment and save up to 12,000,000 kilowatts of capacity.

A clear example of the practical embodiment of Lenin's ideas of electrification are the high rates of growth of the Ukraine's energy system--a powerful link in the USSR Unified Energy System.

In bringing to life the decision of the 25th Congress of the CPSU and the 25th Congress of the Ukrainian ComPart, engineers and energy builders of the republic are urgently working on expansion of the energy base and enhancement of the reliability of energy supply of the national economy and day-to-day needs of the population.

Only since the start of the current five-year plan there have been 6,300,000 kilowatts of new generating capacities put into operation in the republic. By the start of 1980 overall installed capacity of electric power plants of the Ukraine constituted 43,600,000 kilowatts and was 56 percent greater than in 1970.

The Leninist principle of concentration of capacities is being implemented in sequence. The republic has nine of the 22 thermal electric power plants in the country with installed capacity of over 2,000,000 kilowatts, including the largest ones in Europe--the Zaporozhets and Uglegorsk GRES with capacities of 3,600,000 kilowatts each. Two of these electric power plants alone produce almost as much electrical energy per year as was produced by all thermal electric power plants of the Ukraine in 1960.

The first nuclear power plant in the Ukraine--the Chernobyl' AES, whose installed capacity reached 2,000,000 kilowatts last year--is operating reliably. In 1977-1979, the electric power plant has already generated 18,700,000,000 kilowatt-hours of electricity, releasing 6,000,000 tons of organic fueld for the national economy.

The working classes of the sector were highly inspired by the greetings of the Central Committee of the Ukrainian ComPart and Ukrainian Council of Ministers to builders, assemblers and operators of the Chernobyl' AES on the occasion of completion of construction of Phase I of the station and assimilation of its planned capacity, as well as to the crew of the Zaporozhets GRES on the occasion of ahead-of-schedule fulfillment of socialist obligations to generate the 100,000,000,000th kilowatt-hour and savings of fuel energy resources. The high evaluation of the labor achievements of the two leading electric power plants of the republic compels all engineers and energy builders of the Ukraine to work still better and to labor with even greater performance.

Work on further technical rearmament of the sector is being done by equipping the Rovno, Yuzhnoukrainsk, Khmel'nitsa, Zaporozhets Crimean AES.

An active search is going on in the republic for assimilation of new kinds of energy sources. In the 11th Five-Year Plan is planned the construction of a

prototype industrial electric power plant using solar energy for its operation.

Production of electrical energy in the Ukraine reached more than 231,000,000,000 kilowatt-hours in 1979 and was 1.7 times as great as in 1970. The average annual rate of increase in energy production for 1971-1979 was 5.9 percent, which is higher than in most highly-developed capitalist countries.

In the thermal electric power plants of the republic are operating 97 modern energy units of total capacity of 27,900,000 kilowatts or 82.6 percent of the total capacity of thermal electric power plants of Ukrainian Minenergo. In the past year the coefficient of utilization of modular equipment was significantly improved, including the most economic groups of units of 300,000 and 800,000 kilowatts.

Provision of thermal electric power plants with highly economic modular equipment, enhancement of the technical level of its operation permitted in four years alone of the current five-year plan to reduce the relative consumption of fuel by 7.5 grams per kilowatt-hour and save more than 3,500,000 tons of coal as compared to 1975.

Much attention has been given to development of electrical networks in the Ukraine. The overall range has already exceeded 800,000 kilometers. In 1978 was completed the construction of a trans-Ukrainian power transmission line carrying 750 kilovolts from the Don Basin to the western frontier of the USSR and then on to Albertirsy, Hungary. Putting it into operation raised the reliability of electrical power supply of the western regions of the Ukraine and made it possible to bring the USSR Unified Energy System and the combined energy systems of the CMEA members into parallel operation.

Serious successes were achieved by the republic in electrifying agriculture. Provision of livestock complexes and bird processing factories with reserve sources of power is already over 90 percent and in 1980 this work will be completed. Electrical supply of labor at kolkhozes and sovkhozes was 2.5 times as great as in 1970.

By taking active part in the All-Union socialist competition for pre-schedule completion of assignments of the fourth year of the five-year plan, teams of energy enterprises of the Ukraine guaranteed performance of the overwhelming majority of points of their socialist obligations.

As a whole, Ukrainian Ministry of energy has reduced the number of emergencies and equipment failures in comparison to 1978 and has increased the trouble-free operating interval of all groups of energy units.

As a result of implementation of organic and technical measures aimed at an increase in labor productivity, in one year more than 2,300 men were freed, 1,500 of which were the result of the incrased technical level of production. Based on incorporation of means of mechanization and automation, 1,300 men have been switched to mechanized labor versus the planned 1,200 men. In the four years of the five-year plan, labor productivity in the sector has grown 11.1

percent versus 9.8 percent specified in the annual national economic plans.

In the energy associations, measures were taken to improve the energy production administrative structure, widen management accounting procedures, firm up state and financial planning discipline. In conformity with the plan of social development of the sector in the past year 7,200 new workers have been trained, 90,000 workers and technical engineering personnel have raised their qualifications, living quarters of 149,000 square meters have been built, a new school has opened for 1568 students, day care center for 1590 children, a 200 bed hospital, 300 patient polyclinic, and several other cultural and domestic facilities.

Successes in development of energy of the Ukraine became possible because of the constant attention of the ComPart and Soviet government to the issues of electrification and are the result of the self-sacrificing labor of a many-thousand man team of engineers and energy builders. Great practical aid has been rendered to engineers and energy builders of the republic by the Central Committee of the Ukrainian ComPart, its Politburo, Ukrainian Council of Ministers, and the USSR Ministry of Energy.

Mobilization of teams of energy enterprises to fulfill assignments of the State plan and adopted socialist obligations was to a great extent promoted by improved organization of socialist competittion and change of advanced experience.

By supporting the patriotic undertakings of labor teams of the Zaporozhets oblast "Manual labor against the shoulders of machines" and the initiative of Rostovites "Work, don't shirk", the team of the Zaporozhets GRES came out with the initiative "Fulfill the five-year plan by the third anniversary of adoption of the USSR Constitution", which was supported by more than 60 energy enterprises of the republic. At the lead of socialist competition in 1979 were also the teams of the Kievenergo Energy Association, the Kurakhov GRES, the Kiev TeTs-5, the Ternopol' oblast enterprise of electrical networks and others.

Among the pioneers of the socialist competition were P. I. Alekseyenko, senior machinist of the Ladyga GRES and laureate of the Ukrainian State Prize; G. F. Malyy, senior machinist of the Zaporozhets GRES; A. S. Gal'chenko, master of the electrical shop of the Starobesheva GRES; N. Ya. Propletkin, master of the Evpatoriy enterprise of electrical networks; Yu. Ya. Pavlenkov, senior machinist of the Zaporozhets GRES; V. S. Nosenko, master of the Cherkassk TETs; V. I. Yermakov, machinist of the plant of the Zmiyeva GRES; N. I. Rzhevskiy, senior machinist of the Slavyansk GRES and many others.

The labor of engineers and energy builders has been highly estimated by the ComPart and Soviet Government. For successes achieved in labor in Ukrainian Minenergo alone in four years of the 9th Five-Year Plan, 847 leaders of production were awarded orders and medals of the Soviet Union, 20 were given certificates of the Ukrainian Supreme Soviet. Eight workers received the honorary titles "Worthy Engineer of the Ukraine".

The results of industrial and management activities in 1979 were examined at an expanded session of the college of the Ukrainian Ministry of Energy. The college noted that in addition to general positive results, there continued to take place serious omissions and shortcomings in the work of the sector. At some energy enterprises, generating capacities are not utilized efficiently enough; emergencies and low quality repairs were permitted; reserves for reducing relative consumption of fuel and technological losses of electric energy in networks and transformers were not fully utilized. The college affirmed the basic organizational and technical engineering measures whose implementation will permit fully use of intraindustrial reserves and will assure successful performance of the State plan and socialist obligations for the final year of the five-year plan.

The measures considered are, in particular, the implementation of a complex of work on modernization and reconstruction of the thermal power equipment including energy units of 800,000 kilowatts capacity, enhancement of the technical level and optimization of operating conditions of electrical networks, incorporation and evolution of automated control systems, adoption of measures for further improvement of technical and economic indicators of sector operation.

Like the entire Soviet nation, the engineers of the Ukraine wholly and totally approve the decisions of the November, 1979 Plenum of the CPSU Central Committee, the situations and conclusions set forth in the clear program speech at the Plenum of comrade L. I. Brezhnev, general secretary of the CPSU Central Committee, chairman of the Presidium of the USSR Supreme Soviet.

In conformity with the indications of comrade L. I. Brezhnev on the need for accelerated expansion of the fuel and energy base of the country, special attention is given to the growth of production of electrical energy and fuel extraction in the State plan of economic and social development of the USSR for 1980.

In the Ukraine, generation of electrical energy in the final year of the five-year plan is set for 237,900,000,000 kilowate-hours, which is 2.8 percent higher than the 1979 level. From the overall volume of electrical energy, 214,900,000,000 kilowatt-hours should be produced at electric power plants of Minenergo UkSSR and 13,000,000,000 kilowater-hours at the Chernobyl' nuclear power plant within the jurisdiction of USSR Minenergo.

The increase in generation of electrical enegy at nuclear electric power plants of the Ukraine will amount of 16.1 percent in 1980. Because of the use of AES during the year about 4,500,000 tons of organic fuel will be freed.

The level of consumption of electrical energy in the republic (gross) will increase 3.9 percent, while output of thermal energy to users from electric power plants of Ukrainian Minenergo will increase 1,300,000 gigacalories and will reach 56,800,000 gigacalories.

In the year of the sixtieth anniversary of the adoption of Lenin's GOELRO plan, the republic's energy base has expanded considerably. It is planned to put into operation 2,820,000 kilowatts of new generating capacities, including 2,440,000 kilowatts or about 87 percent in nuclear power plants.

Two 1,000,000 kilowatt plants should be put into operation at the Chernobyl' and Yuzhnoukrainsk AES, a 440,000 kilowatt capacity plant at the Rovno AES, a 120,000 kilowatt thermal turbogenerator at the Kharkov TETs-5. By the day of the 110th anniversary of the birth of Vladimir Il'ich Lenin, the last two hydraulic generators will be put into operation at Dneproges and the capacity of the first Lenin plan GOELRO will rise to 1,520,000 kilowatts, i.e., it will be 2.7 times as great as at first.

Construction on the remaining nuclear electric power plants, the Zuyevsk and Chigirnsk GRES, Kiev TETs-6, Dnestrovsk complex hydraulic junction will be continued: their capacities are to be introduced in the 11th Five-Year Plan.

To enhance the reliability of electrical supply of consumers according to titles of the Ukrainian Ministry of Energy alone in 1980 there will be constructed more than 25,200 kilometers of power transmission lines, including 23,500 kilometers for supply of rural electric power.

For the purpose of further improvement of living conditions of the working classes of the sector, it is planned to construct living quarters totalling 138,500 square meters in area, two day care centers, three hospitals and two general educational schools.

Great problems must be solved by engineers of the republic in 1980 on accelerating technical progress, enhancing reliability and economy of equipment and network operation, growth of labor productivity, prevention of emergencies and cases of industrial trauma. Rapid assimilation in operation and output to planned parameters of re-introduced equipment at nuclear power plants must be guaranteed.

The basic indicator of efficiency of the energy production--the relative consumption of conventional fuel--must be reduced to 245 grams per kilowatt-hour, or by 2.6 grams; in one year this will free about 500,000 tons of conventional fuel for the national economy. This can only be achieved if reliable operation of highly economic energy plants is guaranteed, including plants of 800,000 kilowatts, and performance of each electric power plant of its assignments to reduce specific consumption of fuel.

Considering the existing problems with fuel supply of electric power plants, all measures should be taken to reduce consumption of gas coals, furnace fuel oil at coal electric plants, for maximum utilization of seasonable excesses of natural gas and plentiful kinds of coal.

Organization of repair campaigns and preparation of the entire energy management must be greatly improved for operation under the winter conditions of 1980-1981. An important task of engineers is to eliminate shortcomings in

the operation of individual electric power plants, cases of low repair quality, noted in the report of comrade V. V. Shcherbitskiy, member of the Politburo of the CPSU Central Committee, First secretary of the Central Committee of the Ukrainian ComPart at the December (1979) Plenum of the republic's ComPart Central Committee.

As he indicated at the November (1979) Plenum of the CPSU Central Committee, comrade L. I. Brezhnev said "...no matter at what rate we develop energy, save heat and energy, it will still be a major state-wide problem". Thus work should be continued in every way aimed at guaranteeing strict observance by consumers of their established limits for electrical and thermal energy, performance of assignments to reduce consumed power during hours of peak system load, production of additional energy savings by reducing specific norms of consumption for manufactured products.

The stressed program of 1980 imposed on engineers of the republic a special reponsibility for reliabile energy supply of the national economy and requires assurance of clear and smooth operation of all links in energy management, more active utilization of internal resources of production.

In accordance with requirements of the November (1979) Plenum of the CPSU Central Comittee and the December (1979) Plenum of the Central Committee of the Ukrainian ComPart, in all collectives it is necessary to assure improvement of organizational, ideological and political education work. There must be a significant rise in the level of work on selection, arrangement and training of personnel, strengthening of labor and industrial discipline. Guided by the positions and conclusions presented in the speech of comrade L. I. Brezhnev at the Plenum, efforts of the working classes should be mobilized toward practical solution of problems of raising efficiency of production and quality of work, urgent improvement of the style and methods of management, train personnel in the spirit of principal exactions, implacability toward shortcomings, firmness in achieving the planned goals, to raise personal responsibility for solution of the problems posed. In all subdivisions of energy management it is necessary to constantly strengthen executive discipline and monitoring of performance, to develop business critique and self-criticism.

In fulfillment of the resolutions of the CPSU Centrl Committee and the USSR Council of Ministers on questions of improving management mechanics all economic work in the sector must be elevated to a new step; measures must be taken for further improvement of the production control structure, strengthening of management accounting and conditions of the economy, intensification of the organizing and mobilizing role of the plan. Comrade L. I. Brezhnev in his speech at the November (1979) Plenum of the CPSU Central Committee emphasized: "It is necessary to react operatively and acutely to signs of poor management, violations of established plans, rules and standards".

Much work lies ahead in composing the plan of economic and social development of the sector for the 11th Five-Year Plan with an outlook to 1990.

An important condition for assuring performance of the State plan and socialist obligations for the final year of the five-year plan is the development of mass socialist competition, improvement of propagation of advanced industrial experience and labor initiatives. Using labor enthusiasm elicited by national preparation for the 110th birthday of Vladimir Il'ich Lenin and the 26th Congress of the CPSU, all efforts should be made to improve organization of socialist competition, raise its level of activity, mobilize teams of energy enterprises for effective use of all current reserves, create reliable foundations for successful work in the 11th Five-Year Plan. Wide propagation is merited for the initiative of the initiator of socialist competition of Ukrainian engineers in 1980--the team of the Kurakhovsk GRES which, together with other industrial enterprises of the republic, came forward with a valuable initiative on saving fuel and energy resources.

In response to the summons of the CPSU Central comittee to convert the final year of the 10th Five-Year Plan into a year of Leninist shock work, engineers of the Ukraine are applying all their efforts and knowledge to further improve energy supply of the national economy and have taken on nigh socialist obligations and are now urgently laboring on their execution.

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CSO:1822

LEP-500 CONNECTS NUREK GES WITH CENTRAL ASIA

Tashkent PRAVDA VOSTOKA in Russian 1 Jan 80 p 1

[Article by UzTAG service: "On the March of the Five-Year Plan: The River of Electricity Has Started to Flow"]

[Text] On the eve of the New Year construction was completed on a high-voltage line connecting the Nurek GES with the unified energy system of Central Asia. This electrical 'river' over 700 kilometers long extended from the Vakhsha valley through the Pamir mountains and the Gissar Crest, the Karshinskaya and Golodnaya steppes to Uzbekistan's energy flagship--the Syr-Darya GRES.

The final link in this chain--342 kilometers from Guzar to Shirin--was laid in almost a year by the mobile columns of the Sredazelektrosetstroy association.

With the arrival of cheap electricity of the Nurek GES along the LEP-500 to consumers in Uzbekistan, Kirgiziya and Kazakhstan, over 1,100,000 tons of conventional fuel per year will be saved by the national economy. The reserves of this line will allow a doubling of energy transmission based on construction of the Rogunsk and other plants of the Vakhsha cascade.

In the fourth year of the five-year plan, the team of Sredazelektrosetstroy has erected another series of important objects in Uzbekistan. The 40 kilometer high-voltage line to the pumping station at Syr-Darya, the Yuzhnaya substations in Tashkent and the Almalyk substation have been put into operation. The amount of construction and assembly work was 5,700,000 rubles higher than the previous year.
[24-8617]

8617
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1800-KILOVOLT TRANSCONTINENTAL POWER TRANSMISSION LINE

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 21 Dec 79 p 1

[Article by N. Krupenik, TASS Correspondent: "Superroutes for electricity"]

[Text] Leningrad, 20 Dec 79. All the electrical energy of the Sayan-Shushen GES can be switched over to the European center of the country with minimum loss in a 1,800 kilovolt AC electrical power transmission line.

Testing of the model of this transcontinental supercommunication was completed today by scientists of Leningrad Polytechnic Institute.

"When the country had only mastered 750 kilovolt electrical lines, it was thought that the limit had been reached," suggests the experiment of professor G. Aleksandrov, head of the department of electrical equipment. "As laboratory experiments have shown, air can not survive higher voltages as an insulator: breakdown inevitably occurs. Experiments run with original equipment and devices are convincing, however, that LEPs of even high-voltage classes can be constructed," emphasized the scientist.

The need for imminent creation of a super electric line was indicated in a speech at the November (1979) Plenum of the CPSU Central Committee by comrade L. I. Brezhnev. According to predictions, these energy bridges will be the most efficient for transporting electrical energy from the regions of Siberia and Kazakhstan to the Urals and the center of the country. Innovative commutation equipment and devices are required to resolve this problem.

In cooperation with planning and industrial organizations of the country, our scientists created and tested original breakers and switches. New means of attaching reinforcement and conductors have been proposed, and recommendations have been made to reduce the dimensions of the planned substations. [24-8617]

8617
CSO:1822

BRIEFS

LEP-110 FROM LENINSK TO NOVOKAZALINSK—Kzyl-Orda (TASS)—Oasis fires. The ancient oases of the Syr-Darya valley have been converted to centralized electrical supply. The LEP-100 from Leninsk to Novokazalinsk has been put into operation. A web of low-voltage electrical bridges was spread from this line to villages and auls near the eastern coast of the Aral Sea. All kolkhoz and sovkhoz central farmsteads in Kazakhstan will be connected to the State energy system this year. [Text] [Moscow IZVESTIYA 24 Feb 80 p 1]. The ancient oases of the Syr-Darya valley have been converted to centralized electrical supply. The LEP-110 from Leninsk to Novokazalinsk has been put into operation. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 9, Feb 80 p 2] 8617

LEP-220 FROM THE ARKAGALINSKAYA GRES TO OMSUKCHAN—Magadan—The assault of the Kapranovsk mountain pass was completed by builders of the high-voltage electrical transmission line from the Arkaglinskaya GRES to Omsukchan. At an altitude of 1,300 meters above sea-level, the crew of I. Shilovskikh assembled the final support for this LEP-200. In a few days current from the Arkagalinskaya GRES will be fed to the mining region of the Magadan oblast—Omsukchan. They are ready there to receive the electrical energy. [Text] [Moscow TRUD in Russian 21 Dec 79 p 1] 8617

POWER TRANSMISSION LINE FROM ZEYA GRES TO AMUR—The industrial and communal services of the Pashkovskiy sovkhoz in the Obluchensk region of the Jewish Autonomous Oblast have been connected to the State electrical network. Many other farms can now do without expensive diesel power plants and local boiler units using imported coal. This opportunity was provided by the creation of the Zeya GES-Amur energy system. Consumption of electrical energy in the rural regions of the Amur river region increased 1.5-fold since the start of the current five-year plan. More than 3,000 kilometers of electrical transmission lines have been built in that period. The LEPs have fed current from the Zeya GES and other plants to hundreds of sovkhozes, taiga villages and settlements. By the end of 1980, work is planned for completion on centralized supply of electrical energy to populated areas of the Amur river region. Copyright: Stroyizdat, 1980. [Text] [Moscow ZHILISHCHNOYE I KOMMUNAL'NOYE KHOZYAYSTVO in Russian No 2, Feb 80 p 15] 8617

PORTABLE ATOMIC POWER STATION--An experimental portable atomic power station has been developed in the Atomic Reactors Research Institute in Dimitrovgrad on the Volga. With a capacity of 5,000 kilowatts, the station will be used for heating buildings. It is intended for isolated areas away from the mainline heat supply. The station's design is simple, as is its operation. Dissembled into blocks, it is easy to transport. It produces both electricity and heat in one year the station consumes only about five pounds of nuclear fuel. The expenditure involved in building it is insignificant. [Text] [Karachi MORNING NEWS in English 11 Apr 80 p 6]

INGURI RIVER STATIONS--The construction of the second powerful hydropower station has begun on the Inguri River in the Caucasus. A total of five stations will be built there with an aggregate capacity of several million kilowatts, which is much more than the aggregate capacity of hydropower stations now in operation in Georgia. The construction of the first power station on the Inguri River with a capacity of 1,300,000 kilowatts will soon be completed. The station is generating electric power today, and soon the last units will be assembled. The power-generating system on the Inguri River will ensure the republic's growing requirements for electric power for a long time to come. [Text] [Rangoon THE WORKING PEOPLE'S DAILY in English 18 Apr 80 p 6]

GEOTHERMAL POWER FROM VOLCANOES--Volcanoes in the Soviet Far East will be made available for energy production. The first "energy contributor" will be Avachka Volcano, which is situated on Kamchatka and whose 5-km deep magma core is currently being investigated by scientists. According to their estimates, the thermal reserves of this volcano are enough to supply a 5-mil kW powerplant. The construction of such a powerplant, which is to supply the northern portion of the Far East with cheap electric power, is planned for the near future. [Text] [Bonn DIE WIRTSCHAFT DES OSTBLOCKS in German 21 Mar 80 p 3]

CSO: 1826

ENERGY CONSERVATION

OIL BY-PRODUCT UTILIZATION

Moscow PRAVDA in Russian 5 Mar 80 p 2

[Article by R. Sabirov (Nizhnekamsk, Tatarskaya ASSR): "It Does Not Appear in the Designs"]

[Text] Still another permanent structure has been sited together with the imposing distillation towers that are in operation at the oil refinery of Nizhnekamskneftekhim [Nizhnekamsk Petrochemical Association], where raw material arriving from the fields is transformed into final product. Here the residues of distillation products are being burned in the mazut fire. Specialists consider that destruction of the byproducts has been arranged in accordance with the latest word in technology. Everything is aimed at avoiding pollution of the environment. The need to explain to sanitary inspection has become superfluous. Transport for hauling waste products away to sludge dumps is not needed. But is it a good business to burn the waste products of petroleum refining or to bury them in the ground? The conversation with the association's deputy chief engineer, G. Skripnik, began with this question.

"Let us suppose that from both the ecological and the economic points of view it is much more important to use the raw material completely, without any waste," Gennadiy Zakharovich says persuasively. "Then nothing will be destroyed. Everything will be put to use and will have a purpose."

It is difficult not to concur with this policy. The extractive industries expend much more capital investment per unit of product produced than do the processing industries. This means that it is especially important to save the raw material, which has been recovered with such enormous labor, to "squeeze" everything possible out of it.

A person who has not been in Nizhnekamsk for a few years will be favorably astonished at not seeing those huge red-maned flares that blazed

day and night above the local refineries' reactors. The light fractions not susceptible to further utilization are now being used as fuel. The profit is appreciable--more than 6.5 million rubles per year. The complex of water-purification and gas and dust scrubbing structures is the pride of the petrochemical workers. Thanks to them, during the past year there was not one violation of the permissible concentration of hydrocarbons on the refineries' grounds, and the water poured into the Kama is clean.

During the last 5 years the association's productive capacity has increased 5-fold, but the requirements for water have remained at the same level. This has been achieved by creating a closed-circuit system of water supply, where the water works for 50-60 cycles.

In 1978 a group of the association's engineers and scientific workers of the Kazan' Chemical-Industry Institute was awarded the Leninist Komsomol Prize for a set of operations that improves the processes of isolating divinyl and isoprene. Another creative group of enthusiasts created a technology for processing waste products of the main conveyor--offsize rubber crumb. A special department right now is obtaining very good waterproofing material--butylkor--from it. The new material has been shipped to meet the needs of the builders of Nizhnekamsk, the BAM [Baykal-Amur Mainline] and Olympic facilities in Moscow. The output of anticorrosion paint has been arranged.

The petrochemical workers are seeking out and using other possibilities for increasing the output of products not called for by the original outlines and drafts of the plans. In all cases, waste that until even recently was burned or was sent to the sludge pits is serving as raw material. A technology for producing varnishes made of bottoms, which enable up to 4,000 tons of product of excellent quality to be obtained, has been developed. The consumer-goods department has arranged for the production of polyvinyl tiles, rubber-based linoleum, polyethylene film, water hoses and brake fluid for motor vehicles. Nizhnekamsk's petrochemical workers often travel the unbeaten path. The list of innovations they have introduced at their own responsibility and risk could be continued. The association obtains about 25 million rubles of additional profit per year from the sales and utilization of byproducts.

However, we will not labor under a delusion. What they are doing here by their own efforts is only a small fraction of what is possible.

Recently, on visiting the board of the Nizhnekamskneftekhim Association, I noticed one curious document. It reported that a competition for the best suggestion for the reduction and rational use of production waste had been announced in subunits. Thirty-two topics were proposed for the innovators' attention. The total volume of waste products and byproducts that were to be put to use came to about 500,000 tons.

One can praise the Nizhnekamskers and remark on their persistent striving to work economically and carefully. But nevertheless it must be

recognized that the problems that production workers encounter would be solved much more effectively if measures associated with the utilization of byproducts were called for in the studies and in the designs. Unfortunately, there has been none of this yet. The wish that has been cited, which, on the whole, is not new, is not considered even during the creation of such giants as the Nizhnekamsk complex, which consists of 11 large enterprises.

Professor A. G. Liukomovich, of the Kazan' Industrial Chemistry Institute, who is the association's scientific consultant, has made this specific computation. The two operating divinyl plants and two isoprene-monomer plants have a target product output that is 44 percent of what is consumed. The remainder is byproduct. But perhaps this technology is now out of date?

"Nothing of the kind," remarked deputy chief of the association's engineering division G. K. Yagodkin. "Right now the second isoprene-monomer plant is in the construction stage. And what about it? The design calls for a specific output of 65 percent byproducts."

The industry's scientific-research and design institutes that set the technological base for the Nizhnekamsk complex's production facilities consider only what is necessary to fulfill the industry's tasks. They pay little attention to the integrated use of raw material. In all the designs for existing production facilities there is not even an attempt to somehow decide the ultimate fate of the numerous byproducts. The latter come to hundreds of thousands of tons and contain up to 30 percent of useful components. In the designs, these are lined out or there is the laconic conclusion, "to the waste-heat boiler." Thus the production workers have to rack their brains over problems that should have been envisioned previously.

"Meanwhile," says association general director N. V. Lemayev, "the practical workers see fulfillment of the goals not in those partial measures that we have initiated but in the improvement of the practice itself of developing industrial processes for petrochemicals, of creating combined systems that mandatorily predicate repeat processes, the raw materials for which would come from the byproduct of preceding stages."

A parochial approach is perceived also in another aspect. Let us return to the installation that stands alongside the refinery. Thousands of tons of expensive mazut are expended in burning main conveyor residues. But these residues are small—a hundred tons are fed to the fireboxes annually. Half of the weight consists of petroleum product which could yield many useful substances if given more intensive refining. However, again, this is not called for by the process scheme.

Back in the days of construction the operators proposed to install in the firebox a most ordinary coil that could use part of the heat, to make steam for the installation's in-house needs. But the designers took the position of not going to the extra bother and refused: "It was not called for!"

True, it must be agreed: despite its seeming clarity--put waste material to use!--the problem is complicated and not easy. Ordinarily, scientists and specialists of the stolid scientific-research institutes say that science still has not come that far: it is not, they say, simple to create new industrial processes for a later stage of processing raw material. These wastes have a different structure, different physical and chemical properties. Therefore, development must begin afresh. But in practice, the problems before which the workers of scientific-research and design institutions throw up their hands often are solved during production at plant laboratories.

Production workers could solve many problems of waste utilization more actively. But they have not been given adequate rights to do so. For example, the general director of that same Nizhnekamsk production association has the right to expend only half a million rubles per year to create new production facilities for processing byproducts. You will agree that this is a drop in the sea, given the scale of the petrochemical giants that have risen up in the Volga region, Siberia and the Urals.

And there is more. All 14 enterprises that make up Soyuzkauchuk have their own scientific-research laboratories. Obviously, the time has come to listen more attentively to the voice of those who have posed the question of strengthening them substantially and developing industrial-experiment bases at them. Today each of these laboratories is working in isolation; their activities are not coordinated.

In the long chain from recovering crude oil to obtaining a specific product leftovers are inevitable. Obviously, one should not mandatorily limit the effort to use them to the conveyor. That which is a waste product here can become a raw material at another production facility.

It is desirable that USSR Gosplan or some other managerial element be engaged in the distribution of byproducts of all production facilities for the many sectors of the national economy over the long term. So each enterprise and each collective should not have to search by itself, as the Nizhnekamskers are doing, for consumers to take the byproducts. They should be considered as something good, as riches, as raw materials taken from the ground at great expense in human labor.

11409
CSO: 1822

CSA OFFICIALS EXAMINE FUEL-ENERGY BALANCE

Moscow VESTNIK STATISTIKI in Russian No 3, Mar 80 pp 10-19

[Article by Aleksandr Petrovich Kolesnikov, candidate in economic sciences, chief of a division of the Administration of Statistics of Material and Technical Supply and Census of the USSR Central Statistical Administration, and Valentina Alekseyevna Voropayeva, senior economist, Central Computer Center (TsVTs) of the USSR Central Statistical Administration: "Concerning Improvement of the Methodical Bases of Working Out the Current Fuel-Energy Balance"]

[Text] The 25th Congress of the Communist Party and subsequent plenums of the CPSU Central Committee on the basis of creative application of Leninist principles of management under the specific historical conditions of developed socialism determined the strategic directions of further improvement in national economic planning.

One of the main directions is raising the level of balance of the state plans, since balance of the plans and their major sections is the basis of their reality and successful fulfillment. The experience of many years of practice in planning and analysis of the state of the country's economy confirms that it is best of all to establish and support certain quantitative relations and national economic proportions using the balance method, the theoretical basis of which is the Marxist-Leninist theory of socialist reproduction.

A large role in achieving balanced coordination of the indicators of the State Plan of Economic and Social Development of the USSR belongs to the system of material balances that has been established over the course of decades and is the basic method of planning and statistical economic analysis of physical-commodity proportions.

Therefore improvement of the work on balances has great significance among the measures for futhher improvement of the planned management of the economy set forth in the resolution of the CPSU Central Committee and the USSR Council of Ministers dated 12 July 1979, "On Improvement in the Planning and Increasing the Effect of the Economic Mechanism on Increasing the Effectiveness of Production and the Quality of Work."

In statistics the balance method yields the opportunity not only to analyze the tendencies in the consumption and utilization of physical resources, but also to reveal the reserves for curtailing non-productive expenditure of these resources owing to selection of the most rational intersectorial and intrasectorial relations, and more effective and complex utilization of raw materials, supplies, fuel, electrical and heat energy.

In order to solve the complex group of problems regarding further increasing the effectiveness of public production and enlistment of the reserves of physical resources using the current material balances developed by the USSR Central Statistical Administration it is necessary constantly to improve the methodical and organizational aspects of their development.

This will be followed with especial clarity using the example of development of the methodical bases of working out the current balances of the country's fuel and energy resources.

The basic goals and principles of compiling current balances of fuel and energy were formulated back in the 20's. During the period of developing the Second Five-Year Plan included in the draft of the forms and indicators for industry was a systematic program for compiling the balance of the fuel supply of the republics and oblasts and on the basis of this a detailed energy balance was compiled. Much attention was given to compilation of the fuel balance, using which the task of recording all the consumers, including the public, was resolved. (In this way it differed from an analogous balance compiled during the First Five-Year Plan.)

In the 40's and 50's included among the reporting of an industrial enterprise for the USSR Central Statistical Administration were the reports "Fuel Balance of Enterprises" (form No. 22), "Electricity Balance and Balance of Heat" (form No. 24), "Composition of Equipment" (form No. 25) which made it possible to obtain rather complete information for analyzing the status of the energy economy and evaluating the level of use of energy resources. However this statistical reporting on the consumption and utilization of fuel-energy resources was worked out only in a departmental breakdown. Not taken into account in it were the established intersectorial, intrasectorial and inter-rayon relations which have a definite effect on formation of the structure of the fuel-energy resources, on a change in the ratios in consumption and the directions of their utilization. Such a position could not serve as a premise for optimum planning of the production (extraction), distribution and utilization of fuel-energy resources in a unified complex.

In the indicated resolution of the CPSU Central Committee and the USSR Council of Ministers especial attention is given to problems of improving the quality of planning the extraction (production), distribution and economical utilization of fuel-energy resources.

It is known that at the present time fuel is the basic source of all types of energy utilized in the national economy. Such natural energy resources

as hydro-energy, the energy of the Sun (helio-energy), geothermal heat (geothermal energy), wind energy and others, and also nuclear fuel (atomic energy) still make up an insignificant value with respect to their specific weight. However, foreseen in the future is a sharp increase in the amounts of their utilization (especially of hydro-energy and atomic energy).

In the process of production, fuel-energy resources are consumed either one time in different technological or power installations or by means of preliminary transformation of them into forms of energy (electrical and heat) that are more convenient for transportation and industrial utilization. Electrical energy in turn may be transformed into mechanical or heat energy and used in power motors, industrial furnaces and other technological installations.

Thus, different sources of energy may be used in one and the same processes of physical production. However the expediency and effectiveness of their utilization in a given process can prove to be different, which requires the selection of the most rational sources of energy in each individual case.

The annual statistical reports on the extraction (production) of individual types of fuel and energy, their distribution and utilization, and the developed current physical balances of individual types of fuel (besides the balance of electrical energy) do not give an overall picture of the production and consumption of different types of fuel-energy resources in their interconnection, they do not take into account the territorial distribution and consumption of individual types of energy resources, or the major directions and the nature of their use. Consequently, the development of a current fuel-energy balance is a real necessity.

The fuel-energy balance can be regarded as an aggregate of partial balances of individual types of fuel and energy, tied together in a single complex system, that is, a system of economic indicators characterizing the presence and utilization of different types of fuel and energy at an individual enterprise, in an oblast, kray, republic, or in the country as a whole.

In 1959 the USSR Council of Ministers obliged USSR Gosplan and the USSR Central Statistical Administration jointly with the Councils of Ministers of the union republics to organize the development of planning and performance (current) fuel-energy balances both for the USSR as a whole and for the economic-geographical regions, in order to improve significantly the structure of the country's fuel-energy balance and also the distribution and utilization of all types of fuel and energy.

Using the current fuel-energy balances it is possible to solve a number of problems which have great significance for the development not only of the fuel industry and electric power engineering, but also for the country's whole national economy. In particular, these balances make it possible

to follow the basic tendencies in the change in the structure of production and consumption of fuel-energy resources, to determine the most expedient directions and levels of development of individual sectors of the fuel industry and electric power engineering, and also to establish the most rational economic relations between individual union republics as the consumers and producers of different types of fuel and energy.

In accordance with the task set forth by the USSR Central Statistical Administration work was done on creating the methodical foundations for compiling a composite current fuel and energy balance for the country. Worked out in the process of preparing for compilation of the balance for 1960 was a system of economic indicators taking into account observation of the comparability of similar indicators, the possibility of their generalization and control. Much attention was given in order to exclude the probability of double counting when obtaining the final indicators. In order to evaluate the proportion of individual types of fuel and energy in the overall structure of energy resources and their distribution, all types of fuel and energy were recalculated as conventional fuel (7000 kcal/kg).

The summary balances for an oblast, kray, republic and for the country as a whole were compiled on the basis of the "Current Fuel-Energy Balance of an Enterprise (Organization)" (form No. 1-TEB) and "Report on the Carry-overs, Receipt, Expenditure and Shipment of Fuel and Energy" (form No. 1-RTE). In addition, enterprises and organizations, the daily fuel expenditure of which in the standard calculation came to two tons and more, whose heat energy consumption was 15 Gcal and more or with an augmented (installed) electrical capacity 100 kVA (kW) and more, completed a report using form No. 1-TEB, and enterprises and organizations with a smaller daily expenditure of fuel and energy completed a report using form No. 1-RTE.

The current fuel-energy balance for 1960 was a table complied according to a two-coordinate scheme: expected--reported. In the "expected" part the tables enumerated all the types of fuel and energy used at enterprises; in the resource section of the "reported" were the sources of formation of each type of fuel-energy resource, and in the distribution section were the directions of expenditure of each type of fuel and energy, and also their losses, release to other enterprises and organizations, and remainders at the end of the reporting period.

Of the greatest interest was the distribution part of the balance, wherein were shown eight directions of utilization of fuel and energy: as raw material for processing into other types of fuel; for production of electric power; for production of heat energy; for direct consumption; losses, and shortages; export to other republics; exports; balances at the end of the reporting period with the consumers and suppliers. Direct consumption according to the target directions of use of fuel and energy was interpreted in an appendix to the balance:

Expended for direct consumption--total
Including:
In industrial furnaces and other technological installations
In power installations:
Means of transport and hoisting and transport equipment
Agricultural vehicles and mechanisms
In other installations
As raw material and supplies for non-fuel needs
For lighting, heating and ventilation of production and administration buildings
For communal and cultural and domestic needs.

In the fuel-energy balance for 1960 the expenditure of fuel for transforming into other types of energy was recorded only in two columns, "For production of electric energy" and "For production of heat energy," that is, without any indication of by what enterprises or installations (electric power plants or boilers) the fuel was expended. This did not make it possible to determine the effectiveness of the work of energy-transforming enterprises (installations).

When working out the analogous balances for 1965, 1970 and 1975 the expenditure of fuel for transformation into other types of energy was recorded in four columns: "For production of electric energy," "For production of heat energy by electric power plants," "For production of heat energy by boilers," "For production of blast-furnace air and compressed air." In addition, taken into account in 1965 was the compressed air and blast-furnace air produced both by electric power plants and by compressor installations, but in 1975 only that produced by electric power plants was considered. The expenditure of fuel by compressor installations began to be considered arbitrarily as a direct expenditure of it for production-technological or communal-domestic needs (despite the fact that in the indicated units the fuel is first converted into another type of energy and then is used for production-technological and other needs). This is connected with the fact that at enterprises which have compressor units, as a rule, there is no registration of the compressed air produced by them.

The expenditure of fuel as raw material in the balances for 1960 and 1965 was shown in one column, without indication of the enterprises at which it was processed; in the balance for 1970 it was distributed according to two groups of enterprises--fuel processing and chemical; and in 1975 it was distributed among several groups of enterprises: oil-refining, coke-gas and coal-tar chemical, briquette and other fuel-processing enterprises, and also those for the production of chemical and other products.

In the current fuel-energy balance for 1960 the indicator of direct consumption as fuel or energy was interpreted according to six directions of use in the appendix to the balance.

In the balance for 1965 singled out in the interpretation of the indicator of direct consumption of fuel and energy were their expenditures for

production of the 10 major types of industrial output, for fulfillment of different operations of a non-industrial nature, for lighting, heating and ventilation of production and administrative buildings, for communal and cultural and domestic needs and separate was the release (sale) to the public, and the expenditure of fuel for non-fuel needs was excluded from the column "Direct consumption" and recorded in a separate column of the basic form of the balance.

In the balance for 1970 the indicator of direct consumption of fuel and energy, connected with the release of industrial output, was expanded in the appendix to the balance for 43 basic types of industrial output and, in addition, presented additionally in a separate column were the expenditures of fuel and power for agricultural operations. When working out the balance for 1975 this appendix no longer existed, since its indicators in fact duplicated data about the expenditures of fuel and energy for the output of industrial products in the statistical report "On Fulfillment of the Norms and Quotas Regarding Average Reduction in the Norms of Expenditure of Fuel, Heat Energy and Electric Energy" according to form No. 11-sn, which were presented in it for a broader nomenclature of industrial output than in the appendix to the balance.

In order to provide the planning bodies with the initial data for long-range planning of the development of individual sectors of industry, it was necessary to have report data about the expenditures of fuel and energy connected with the release of output, pertaining to individual sectors of industry. Therefore in the appendix to the balance for 1975 (Expended for direct consumption as fuel or energy) singled out were the expenditures of fuel and energy for release of output pertaining to sectors of industry: electric power engineering and the fuel industry, ferrous metallurgy, nonferrous metallurgy, the chemical and petrochemical industry, machine building and metal working, the building materials industry, the food and other sectors of industry. In connection with this, included in the expenditures connected with the release of industrial output were the expenditures (recorded in individual columns of the balance for 1960): in industrial furnaces and other technological installations; for the operation of hoisting and transport equipment serving the technological processes of production of industrial output; and for heating, lighting and ven ilation of industrial buildings. The expenditures of fuel and energy for heating, lighting and ventilation of administrative buildings were attributed to "Other Expenditures."

The expenditures of fuel and energy by transport means (except for their expenditures by intraplant transport going in to the expenditures connected with the release of industrial output) were decoded according to individual types of transport (railroad, water, automobile, pipeline and other types of transport); and also singled out were the expenditures of fuel and energy for agricultural operations, communal and cultural and domestic needs, release (sale) to the public and other operations.

Thus, the fundamental methodical scheme and the organization of the development of summary fuel-energy balances created in 1960 and approved

became the core of balance work for the subsequent reporting periods. The balance for 1980 will not be an exception. Its structure, the system of indicators, the organization of its development and other aspects of the balance work have basically remained unchanged. Along with this, improvements are being made in the tools for working out the fuel-energy balance, in order to correspond to the demands made by the rising level of development of the country's economy.

Improvement of the structure of the balance and its indicators is a continuous process, since at each stage of development of the national economy as a whole and the fuel and power industry in particular, it is necessary to reflect as completely as possible the processes of production, of consumption, and the adequacy of the indicators used with describable phenomena.

Taken into account when preparing the tools for working out the balance for 1980 were the proposals of USSR Gosplan and other organizations about the necessity of introducing additional indicators in the forms of the balance, and also individual methodological positions were refined. Introduced in the new forms of the balance was a significant number of additional indicators reflecting the directions of utilization of fuel and energy. Thus, the expenditure of fuel for conversion into other types of energy is recorded according to individual types of electric power plants and boilers in seven columns; the expenditure of fuel as raw material is recorded according to groups of processing enterprises and installations, and also in seven columns. Added to the appendix to the balance on "Direct Consumption of Fuel and Energy" were two columns, in which are recorded the expenditures of fuel and energy for making output of the timber, wood-working and pulp and paper industry, and also light industry. In addition, also introduced is a new appendix, "Direct expenditure of fuel and energy for the in-house production needs of enterprises, connected with the production of electric energy, heat energy and compressed air, and also with the extraction (production) of fuel and other output of the fuel industry," in which the expenditures of fuel and energy for the in-house production needs of the enterprises, connected with release of output of the fuel-energy industry according to groups of fuel-extracting, fuel-processing and energy-converting enterprises and installations will be reflected. This will yield the opportunity to control the effectiveness of the use of fuel and energy by them, and for the planning agencies it will serve as the basis for long-range planning of the development of the country's fuel-energy industry.

Presented below is the fundamental scheme of the new current fuel-energy balance for 1980 (it is a table) according to form No. 1-TEB and the appendices to it taking into account the elements of improvement.

Reflected in the "Expected" table are all types of fuel and energy comprising the national economy's fuel-energy resources:

I. Natural fuel resources

Coal
Shale
Peat--fuel, lump (with a standard moisture content of 33 percent)
Peat, fuel, milled (with a standard moisture content of 40 percent)
Firewood
Oil (including gas condensate)
Gas, natural, including casing-head
Gas from underground gasification
Other types of natural fuel (lignites, straw, cane, brushwood, fibers, cobs and stems of corn, stems and bolls of cotton plant, by-products of lumbering, woodworking and others)

II. Natural energy resources

Hydro-energy
Atomic energy
Geothermal energy

III. Products of fuel processing

Coke, metallurgical, dry (25 mm and higher)
Coke fines and coke breeze (less than 25 mm), recalculated to dry weight
Coke, petroleum
Coal briquettes
Peat briquettes and semi-briquettes (in standard moisture content)
Furnace mazut
Naval mazut
Fuel, furnace, domestic
Diesel fuel
Gas turbine fuel
Motor fuel
Automobile gasoline
Aircraft gasoline
Kerosene (tractor, lighting, aviation)
Gas, artificial from shales
Gas, coking (reduced to 4000 Kcal/m^3)
Gas, oil-refinery, dry
Gas, liquified
Concentrate from concentrating mills of the Ministry of Ferrous Metallurgy (in weight reduced to the moisture of run-of-mine coal)
Intermediate product and slurry of concentrating mills of the Ministry of Ferrous Metallurgy (in weight reduced to the moisture of run-of-mine coal)
Other products of processing fuel (broad fraction of stabilization of oil, unstable casing-head gas and others)

IV. Combustible fuel (secondary) energy resources

(blast-furnace gas, converter gas and other combustible by-products of the technological processes of production of chemical and other industrial output)

V. Electric energy

Including:
Produced on the basis of fuel:
by electric power plants, producing only electric power
by electric power plants, producing electric power, heat energy and compressed air
Produced by electric power plants on the basis of:
atomic energy
hydro-energy
geothermal energy
spent steam and other secondary (heat) energy resources

VI. Compressed air and blast-furnace air, produced at electric power plants (reduced to a pressure of 1.4 gage atmosphere)

VII. Heat energy

Including that released by:
electric power plants
among these, nuclear
by industrial-production boilers, including the release of heat energy produced in heat-recovery units on the basis of burning combustible (heat) secondary energy resources
by regional heating boilers with a productivity of 20 Gcal/hr and higher
by other heating boilers with a productivity of 20 Gcal/hr and higher and by all boilers in the make-up of the management of unified boiler and heating networks
by heat-recovery installations.

The indicated list of types of fuel and energy makes it possible to reflect in the balance the movement not only of natural fuel-energy resources, but also of the products of their processing and conversion--the derivatives of fuel-energy resources which are used directly in specific production processes.

The "reported" part of the table consists of two sections: "Resources" and "Distribution." Presented in the "resources" section are the indicators describing the sources of formation of resources of different types of fuel and energy, which the national economy had at its disposal in the reporting period, including the remainders of them at the start of the year in the hands of the consumers and suppliers: the remainder at the start of the reporting year; what was produced (extracted) in the report

year; what came in in the report year on the part of all sources; the total resources.

Reflected in the "Distribution" section is the actual consumption of fuel-energy resources during the period under review for the different needs of an enterprise (organization). Presented in it are the following indicators:

Distribution

Expended during the current year

For transformation into other types of energy

By electric power plants:

producing only electric energy--for production of electric energy
producing several types of energy--for production of:
electric energy
heat energy
compressed air and blast-furnace air

By boiler facilities:

industrial-production
regional heating boilers with a productivity of 20 Gcal/hr and higher
other heating boilers with a productivity of 20 Gcal/hr and higher and by all boilers part of the make-up of management of unified boiler and heating networks

As raw material

For processing into other types of fuel and other output of electric power engineering and the fuel industry
For oil-refining enterprises
For petroleum stabilization installations, gas-processing and shale-processing enterprises
At coke-gas and coal-tar chemical enterprises
At briquetting enterprises
At coal concentrating mills of the USSR Ministry of Ferrous Metallurgy
At other fuel-processing enterprises
For production of chemical, petrochemical and other output

As supplies for non-fuel needs

For direct consumption as fuel or energy

Total Expended

[continued]

Losses during:

concentration, grading of coal, desalinization and dehydration of oil
storage and transportation

Released in the direction of other enterprises, organizations and the public

Remainder at the end of the report period.

The column "Expended for direct consumption as fuel or energy" of the basic table of the balance is interpreted as follows:

Expended for direct consumption as fuel or energy

Including:

For release of industrial output

electric power engineering and fuel industry
ferrous metallurgy
nonferrous metallurgy
chemical and petrochemical industry
machine building and metal working
timber, wood -working and pulp and paper industry
building materials industry
light industry
food industry
other sectors of industry

For construction and installation operations

For operation of transport

railroad
water
automobile
pipeline
other types of transport

For agricultural operations

For communal and cultural and domestic needs

For other operations, not enumerated above.

It is necessary to note that developed for the 1980 current fuel-energy balance was an appendix in which the expenditures of fuel and energy for producing output of the country's electric power engineering and fuel industry are interpreted. Presented in it are these indicators:

Expenditure of fuel and energy for producing output of the electric power engineering and fuel industry

Including that connected:

With extraction

of hard coal and brown coal by mines and open pits
of oil and gas by oil and gas fields
of other types of natural fuel by fuel-extracting enterprises

With production of electric energy, heat energy and compressed air

by hydroelectric power plants, geothermal and atomic power plants
by electric power plants producing only electric energy, including water-storage
by electric power plants, producing electric energy, heat energy and compressed air
by industrial-production boilers
by regional heating boilers with a productivity of 20 Gcal/hr and higher
by other heating boilers with a productivity of 20 Gcal/hr and higher (including boiler rooms included in the make-up of management of unified boilers and heating networks)

With production of products of processing natural types of fuels, pertaining to the sector "Fuel industry"

at oil refining enterprises
at gas refining enterprises
at coke-gas and coal-tar chemical enterprises
at briquetting enterprises
at coal-concentrating mills of the USSR Ministry of Ferrous Metallurgy
at other fuel-processing enterprises.

The indicators obtained as a result of developing the summary current fuel-energy balance for 1980 reflect: three basic directions of use of fuel-energy resources in individual regions and for the country as a whole (for conversion into other types of energy; as raw materials for processing into other types of fuel and other output of the fuel, chemical and petrochemical industry, and also for non-fuel needs; for direct (ultimate) consumption as fuel or energy); the distribution of expenditures of fuel and energy according to groups of energy-converting units; the distribution of expenditures of fuel as raw material according to the basic groups of fuel-processing enterprises; distribution of the direct consumption of fuel and energy for producing output of individual sectors of industry, for construction and installation operations, transport, agricultural operations, communal and cultural and domestic needs, and also release to the public; the distribution of direct expenditures of fuel and energy,

connected with the production of output of the fuel and power industry according to groups of fuel-extracting, energy converting and fuel-processing enterprises; the amounts of the losses of coal during concentration and grading, the loss of oil during desalinization and dehydration, and also during storage and transportation.

The data of the balance make it possible to determine: the effectiveness of the work of individual groups of energy converting, fuel extracting and fuel-processing enterprises located on the territory of individual oblasts, krays, and republics; the proportion of each type of fuel and energy in the total expenditure of them for these or other needs; the structure of extraction, of the resources and consumption of fuel-energy resources according to oblasts, krays, and republics, and for the country as a whole, according to sectors of the national economy and industry; the structure of consumption of fuel-energy resources according to enterprises and organizations of individual ministries and departments.

Development of the summary current fuel-energy balance for 1980 will contribute to solution of one of the major tasks of improving the country's fuel-energy balance raised by the November 1979 Plenum of the CPSU Central Committee, particularly the priority task: the reduction of the share of oil and oil products consumed as fuel.

Development of the summary current fuel-energy balance of the oblasts, krays and republics will make it possible to ascertain the economic indicators characterizing the utilization of individual types of fuel and energy, the total turnover of "actual" resources in the country and its individual regions, the level of utilization of fuel and energy during the production of industrial output, the effectiveness of the operation of individual groups of enterprises in the fuel-energy industry, the different groupings of industrial enterprises according to amounts of consumption of fuel and energy with establishment of the proportion of individual groups of enterprises in the overall consumption, and so on.

Development of the fuel-energy balance for 1980 demands from the statistical agencies careful preparation for performance of this important work, the conduct of briefings of workers in enterprises and organizations regarding filling in the forms of the balance and checking of the indicators, the organization of spot-checking of the status of the primary documentation, on the basis of which the forms of the current balance will be completed. Specialists of the ministries, departments, their administrations and associations, and also colleagues of sector scientific-research organizations should be enlisted for verification of the reports in order to improve the quality of the balances developed directly at the enterprises and submitted to the statistical administrations.

The high quality of report balances of enterprises and organizations is the guarantee of successful development of the country's summary current fuel-energy balance for 1980.

10908
CSO: 1822

OBLIGATIONS OF THE GAS INDUSTRY FOR 1980

Moscow PRAVDA in Russian 15 Jan 80 p 1

[Article: "Higher the Banner of Competition. Socialist Obligations Adopted by Workers of Enterprises and Organizations of the Gas Industry"]

[Text] On 26 Dec 79, workers of enterprises and organizations of the USSR Ministry of the Gas Industry fulfilled their 1979 plan for the extraction of gas. In comparison with the year before, the volume of gas extracted rose to 34.5 billion cubic meters, or by 10.8 percent. Over the 4 years of the present five-year plan 28 billion cubic meters of gas has been provided to the national economy. At the same time, tasks for the realization of production were exceeded, there was an increase in labor productivity and an improvement in other indicators.

Workers of the gas industry express their deep gratitude and heartfelt thanks to the CPSU Central Committee General Secretary Comrade L. I. Brezhnev for the warmth of the greeting in which he so highly praised their work in fulfilling tasks set for the dynamic expansion of the gas industry.

Guided by decisions of the November (1979) Plenum of the CPSU Central Committee and by instructions of Comrade L. I. Brezhnev to make 1980 a "shock" work year, a year of work in the Leninist manner, a year in which to strive ever more resolutely for increasing the extraction of gas, particularly in Western Siberia, the work collectives of enterprises and organizations of the ministry hereby adopt the following socialist obligations for 1980.

By the more rapid placement into operation of new capacity, by more effective utilization of existing production capacity, by wide-scale introduction of the achievements of science and engineering, by the general dissemination of the leading experience of production innovators, we hereby pledge that we will exceed tasks aimed at increasing labor productivity by 15 percent; that we will complete the plan for the year by 29 December; that we will complete the five-year plan by 15 December 1980; that we will deliver to the national economy no less than 3 billion cubic meters of gas above the plan for the year, including 2 billion cubic meters by the 110TH Anniversary of the Birth of V. I. Lenin.

We further pledge that we will facilitate the uninterrupted operation of all echelons in our single system of gas supply for the nation on the basis of the fulfillment of complex measures aimed at increasing the effectiveness and reliability of the work of gas pipelines.

We promise to overfulfill the plan for introduction of new equipment, of advanced technology, of the automatization and mechanization of production processes. By doing this, we shall strive to achieve an additional economic effect in the form of 4 million rubles, of above-plan profits in the amount of 35 million rubles, and to conserve no less than 180 million kwh of electric power and 300,000 gcal of heat energy.

We vow to facilitate production of consumer goods by 3 million rubles above the assignments established for us, to achieve gasification of 12,000 apartments, and to deliver 20,000 tons of compressed gas. We pledge to place into use no less than 560,000 square meters of housing, schools to serve 4,400 pupils, hospitals, polyclinics and other social-communal installations. We promise to advance the qualifications of 47,000 workers and to train not less than 120,000 workers in our system of economic training and in our schools of communist labor.

We shall expand the production of animal-husbandry and of vegetable cultivation on our subsidiary farms and to derive from such an effort no less than 13,000 quintals of meat, 20 million eggs, and 11,000 quintals of vegetables.

We gas industry workers assure our Leninist Communist Party Central Committee and Comrade L. I. Brezhnev personally that we will raise still higher the banner of socialist competition in order to mark in a worthy manner the 110TH Anniversary of the Birth of V. I. Lenin in order to complete ahead of schedule both the plans for 1980 and for the 10th Five-Year Plan as a whole.

We now turn to the collectives of construction and installation organizations of the USSR Ministry for Construction of Petroleum and Gas Industry Enterprises and other construction ministries with an appeal for joint cohesive work in facilitating the placement into operation in 1980 of all gas industry installations planned for this year.

Socialist obligations adopted at general meetings of work collectives of enterprises and organizations of the USSR Ministry of the Gas Industry.

9643
CSO: 1822

DURMISH'YAN BOOK ON GAS CONDENSATE DEPOSITS REVIEWED

Baku VYSHKA in Russian 8 Apr 80 p 3

[Article by Kh. Yusufzade, chief geologist of the Kaspmorneftegazprom All-Union Production Association, candidate of geological-mineralogical sciences: "Valuable Monograph"]

[Text] The "Nedra" publishing house has published a monograph by Doctor of Geological-Mineralogical Sciences, Prof A.G. Durmish'yan entitled "Gazokondensatnyye mestorozhdeniya" [Gas Condensate Deposits]. It is devoted to the geological aspects of the study of gas condensate deposits, the theory and practice of their exploration, industrial prospecting and development.

As is known, gas condensate deposits are a new type of hydrocarbon accumulations in the earth. Inherent to these deposits are specific features, the study of which is extremely necessary for solution of the problem of rational utilization of reserves of gas and condensate. The history of their study in our country numbers 25 years in all, while oil deposits have been developed since the middle of the last century. Such deposits were first discovered abroad in the United States at the beginning of the 30's.

The accumulated scientific material and the experience in working deposits of this type needs periodic summarization. A.G. Durmish'yan's monograph fulfills this goal. The author considers here the problem of developing gas condensate deposits as a whole, and gives a rather complete scientific summary of the accumulated data taking into account the complexity of the genesis, conditions of occurrence, and course of the thermodynamic processes in the earth.

Gas condensate deposits are different from oil and gas deposits in that they are subject to the laws of retrograde (reverse) evaporation of oil, which gives rise to the occurrence under bed conditions of oil and gas in a single gaseous phase. This circumstance contributes to obtaining very high yields of gas and condensate (white oil), which in a large number of cases reach more than 1,000 tons of standard fuel per well.

In the USSR the study of gas condensate deposits began essentially in 1965, after the discovery of the Karadag gas condensate deposit in our republic, the first in the country. Prior to this only several works of a survey nature were known in the literature.

The extensive, comprehensive information obtained by the author of the monograph, who has been one of the leaders in the prospecting and development of the Karadag deposit, has made it possible to establish and formulate clearly the basic demands made of the different methods of extracting the hydrocarbon raw material from the earth. Development of the Karadag deposit has proven to be in essence a large-scale experiment in the study of phenomena accompanying the process of exploitation of gas condensate deposits in a regime of exhaustion of the bed energy with all of its positive and negative aspects.

In recent years a large number of new gas condensate deposits has been discovered in different regions of our country. But still many of their features have received little study, by virtue of which there is still no solution to a number of problems connected with exploration, prospecting and development of the beds.

Among such problems there are also questions of geology. The fact is that in the presence of a vast number of monographs on the geology of oil and gas deposits, in our literature and foreign literature the aids regarding gas condensate deposits are clearly inadequate. With the publication of A. Durmish'yan's monograph this gap is filled in to a certain extent.

It is an indisputable advantage of the book that considered in it are many new questions directly connected with the problem of studying gas condensate deposits. Among these it follows to include the question of the role of irregularly high bed pressures [AVPD; anomal'no vysokiye plastovyye davleniya] in the genesis and formation of gas condensate deposits, the problem of bound oil, field observations of the process of dying out of the beds, retrograde changes of gas condensate systems, and so on.

In his work the author shows convincingly that when considering the questions of the orgin, formation and regularities of spatial distribution of gas condensate deposits much attention should be given to the phase state of the hydrocarbons in the process of migration, the role of phase transformations of oil and gas in the depths of the earth, the possibilities of formation of a retrograde gaseous phase in the cut of the oil and gas producing layer itself, to substantiation of the significance of anomalously high pressures during migration of hydrocarbons, the role of the process of re-forming of the deposits, and so on.

Much attention is given to problems of development in the work. This is fully understandable, since one of the chief problems of exploitation of gas condensate deposits is insuring the maximum high coefficients of extraction of hydrocarbons. Along with this, a very urgent requirement for such beds

is the possibility of simultaneous extraction of gas, condensate, and oil. Practice has shown that combining the indicated tasks causes considerable difficulties and greatly complicates the development process. In considering the questions of the completeness of extracting the reserves of oil, gas, and condensate, the author, taking into account the characteristics of different deposits, notes that while a substantial increase in the oil yield for oil deposits is a complex and sometimes hard to solve problem, in the case of development of gas condensate deposits, by virtue of their specific features, there is a real possibility of insuring almost complete extraction of the reserves of condensate from the depths of the earth.

In noting the merits of the book, one must mention also that certain of the author's statements are open to discussion. Arguable, in particular, is his affirmation that industrial aggregations of oil and gas in the geological past went through the "gas-condensate stage of development." Individual long passages also complicate the understanding of the question.

However the indicated and certain other shortcomings do not detract from the value of the monograph. Its publication is of great interest for a broad group of specialists in the oil and gas industry. The book may also be very useful for students in petroleum higher educational institutions. It is only to be regretted that the monograph was issued with a small number of copies printed and already cannot be obtained in the book stores.

10908
CSO: 1822

TRANSCONTINENTAL PIPELINE WORK PROCEEDS SMOOTHLY

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 5 Jan 80 p 1

[Article by special correspondent V. Noskov, Novyy Urengoy in Tyumenskaya Oblast: "The Polar Night is no Hinderance"]

[Text] Yesterday, almost 2 weeks earlier than scheduled, workers of the Main Administration for Construction of Pipelines in Siberia completed the welding work on the first 100 km of pipe for the main section of the Urengoy-Punga-Polyarnyy Ural-Vuktyl-Gryazovets-Moscow-Torzhok gas pipeline.

"Throughout all of our subunits, workers welcomed with tremedous enthusiasm the high evaluation which Leonid Il'ich Brezhnev had placed upon the work of construction workers engaged in the building of installations for the extraction, processing and the transport of gas," Main Administration Chief N. Kurbatov stated in commenting on this event. "An intensive pace has been taken up on all sectors of the pipeline since the first days of the new year."

Laying on the desk of the chief of the Main Administration was a diagram of the future gas transport system. It is not an easy path which confronts the builders of it. They will have to cross over more than 600 rivers and streams, to lay down a "corridor" over 2,000 km in length, across the Taiga and to build crossings over dozens of highways and railroads. The most difficult sector will be that from famous Urengoy to Punga: 780 km of permafrost, covered by marshes and swamps.

The schedule calls for one of these segments to be overcome by September of this year. But our work collective, which has shifted onto an intensive labor watch, has vowed to fulfill this task ahead of schedule--by the 110TH Anniversary of the birth of Vladimir Il'ich Lenin.

In the socialist competition which has unfolded, the leaders are the brigades of welders led by Rafail Ziyatdinov and Nikolay Kotenov, both of whom have doubled fulfillment of shift assignments. In the region where they are working, there is only 2 to 3 hours of daylight: the polar night is upon the tundra. However, this is not a hinderance to the welders.

Aided by electric lights, their work goes on around the clock. All along the route, winter routes have begun to function. Across them is an uninterrupted flow of trucks bearing cargo. "Our brigade never stands idle," states R. Ziyatdinov. "Every man in it is a master of several trades. If necessary, any one of them could climb behind the wheel of a pipelayer or become a crane operator or run excavating machinery. From this stems our high labor productivity."

Results of the work on the pipeline route are summed up twice a day--in the morning and in the evening. These are under the control of a specially-created operations staff which is in communication with all brigades. This enables the staff to resolve problems as they come up.

The entire 3,000 km length of this unique main gas trunkline is due to be placed into operation next year.

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CSO: 1822

FUELS

DRILL PIPE REINFORCED BY INDUCTION HEATING METHODS

Moscow PRAVDA in Russian 10 Dec 79 p 2

[Article by PRAVDA correspondent V. Vasilets: "Magnificent Seven"]

[Text] Anyone familiar with drilling operations knows this fact: The deeper the drill bit penetrates into the earth, the slower the downward progress because the instrument has to be lifted out of the well more frequently. There is in this activity a "sore spot"--the reinforced pipe which bears the weight of the drill bit. Inasmuch as this pipe is not distinguished for its longevity, it also cannot sustain loads. The drillers frequently rush to change this weak link: It is better, they say, to lose time for this additional operation; it is easier than, if there is an accident involving the pipe, to spend months afterwards repairing the well.

Two years ago, it was my fortune to observe this work up in the mountains. The pipe had lasted through only 250 hours of operation, but the drillers decided not to take any risks. A great deal of time was spent in transferring and adjusting the drill bit. The task involved a great deal of trouble and it was expensive, but there was no other recourse, it seems.

Recently, I came upon this familiar installation once again. The same drill rig, the same people. I did not notice any reserve of pipe in the drill rig area. How come?

"We simply do not need it," explained drill rig chief, hero of socialist labor, M. Ye. Susyak. "We succeeded, finally, in curing this 'sore spot'. The reinforced pipe which we have been getting at the rig for the past 6 months is good for not just 400 hours of work, as before, but for 100 or more days. Think of the worries we have been saved from by our equipment suppliers."

Located in Drogobych is an experimental equipment plant which works for the drilling trade. These explorers of the earth have had a long friendship with the workers of this plant. Existing between them is an agreement on socialist competition which serves as a basis for the mutual relations between labor competitors. The main task of both outfits is that of

speeding up the sinking of wells. The people at the plant have improved a whole series of mechanisms, this based on suggestions made by these probers of the earth. For their part, these equipment suppliers steadfastly follow up to see how it is being used and assist their partners to master new innovations and equipment as quickly as possible.

With such close contact between them, the two partners began to explore mutual problems. Together, they managed to resolve many of them. No matter how many times they struggled with this problem of reinforced pipe there was not much either could do with it right there on the spot. Within our nation there are plants which subject these pipes to thermal strengthening, with the thermal processing of metal being done in special furnaces. Each one of these furnaces is a complex structure. Many years have gone into its design and construction. Now it is easy to understand why, with the ever-increasing scale of drilling work now going on, there is not enough of such equipment to go around. Particularly sharp is the shortage in the materials which drillers need for deep and super-deep wells.

For a long time, the people in Drogobych resisted putting in the usual type of furnace, because it took too long and it was expensive. They turned to science for aid. Scientists and specialists of the Institute of Physics and Mechanics of the Ukrainian Academy of Sciences and a number of other scientific research organizations in cooperation with plant workers developed the technology for reinforcing drill equipment. The basis for this technology is the use of waves of industrial electric current. Such a method is well known, but all of the compexity in switching over from heating metal for a long time in furnaces to the rapidity of induction heating methods boils down to this: Such current has been used for the hardening of large size machine elements during their production on a mass scale. That is why, first of all, it was necessary to "write in" this technological capability to the plant's existing capacity.

An installation for the hardening of metal through thermal processing was created in parallel with research into the methodology. Much creative sharpness on the part of the worker collective manifested itself in the process. People spent a great deal of time on the installation. Moscow and Kuybyshev specialists looked after them and assisted them. Such cooperation aided in introduction of this new technology; it was as if, as they say, they had discovered the wheel. The complex worked without having to be put through a test run.

The shop in which drill pipe is reinforced is called the "hot shop." Yet the traditional heating furnaces are not in evidence. The components which have been heated by electric current move on to the cooling section. This regimen for thermal processing is controlled by a system of instruments, with the entire process taking one and one-half hours. A line of workers serves this conveyor belt. For more than a year now, this series production has been delivered to our well drillers. It is the same metal which

came from practically the same source. Yet, in quality, the metal is completely new. It is no accident that this metal bears the 5-cornered stamp of honr. Long ago, the complex reached its projected capacity.

The "Drogobychanka"--this is what the workers christened the new product. At a depth of 4,000 meters and after an operating time of 2,385 hours, the pipe was acting precisely as it did during its very first minutes of being lowered down into the well. Any initiative, as is known, should be judged on the basis of its end results. The Ivano-Frankovskiy Drilling Work Administration provided this record of testimony: During the present five-year plan, the "Drogobychanka" has enabled our well drillers to save more than 600,000 ton-kilometers in weight hauled by tractor-prime movers, has freed thousands of pipe-cutting aggregates, has saved us many hundreds of work-days. The results of these savings are easily understood: Which is easier to deliver to the rig--6 pipes or just one? The need for frequent change of these steel links is no longer there and the need to repair "weathered" pipe parts has disappeared.

What is even more ponderable are the figures received from the Scientific Research Institute. Introduction of electrothermal pipe strengthening has permitted us to reduce the time needed for organization of large-scale series production of highly-stable pipe by 7 years while, simultaneously, reducing our need for capital investment funds by 7.5 million rubles. Added to all this is that fact that operation of the "Drogobychanka" at enterprises of the USSR Ministry of the Petroleum Industry, the USSR Ministry of the Gas Industry, and the USSR Ministry of Geology has already saved us 7 million rubles.

That is a magnificent seven, is it not?

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PIPELINE CONSTRUCTION AND LAND USE PROBLEMS

Moscow STROITEL'NAYA GAZETA in Russian 7 Mar 80 p 3

[Article by R. Polyanskiy, department head of state experts under the USSR Gosstroy: "Whom Is the Pipeline Hampering?"]

[Text] Transport by pipeline is playing an ever-more decisive role these days. This is only natural, for our oil and natural gas deposits are located at great distances from consumers. The average distance for the transport of raw materials over pipelines has already reached 1,600 km. It will soon exceed 3,500 km.

There is no doubt about it. It is more beneficial to build pipelines of greater productive capacity and to increase the diameter of those pipelines.

Through changes in the geography of our basic fuel regions, by the shifting of the center for oil and gas extraction into the northern part of Western Siberia, these facts have complicated substantially the conditions for laying down and for operating our pipelines. Hence, it follows that construction and operation of these pipelines and insuring the reliability of their work acquires special significance. To a great degree, the volume of capital investment funds and the volume of metal to be expended depends upon how that pipeline is layed down.

The construction standards and regulations as approved by the USSR State Committee for Construction Affairs (SNIP 11-45-75 entitled "Main Trunklines") provide regulations which call for the application of mathematical methods and the use of computer equipment in the selection of optimal routes for those pipelines.

A new method for this design work has been developed by a group of scientists and specialists connected with the Moscow Institute of the Petrochemical and Gas Industry Imeni I. M. Gubkin, the "Giprospetsgaz" Institute, and the UFA Petroleum Institute. The group is under the leadership of Doctor of Technical Sciences Professor P. Borodavkin. In their design work, special consideration is devoted to land usage and to the need for protecting the surrounding area.

For the first time, instead of the subjective evaluation of several design studies, selection of a pipeline route was made with the aid of a computer, utilizing large-scale maps, aerial photographs and satellite photos. Along with this, one is guided by the principle that the land upon which pipelines are to be built is being withdrawn for usage temporarily, only during the period of their construction. Later, following its recultivation, such land is returned. This was precisely the method used for designing and building the major pipe trunklines: Leningrad to the state border of the USSR and Finland, Torzhok to Minsk, and others.

However, not in all instances is it possible to carry out construction of a pipleine along a selected optimal route. Thus, for example, in planning the Kuybyshev to Tikhoretskaya pipeline, its length had to be extended by 6.3 percent in order to take into consideration requirements of land users, requirements which were not always substantiated. This, in turn, caused an increase of 15,600 tons in the amount of pipe which had to be used and an additional 8.1 million rubles in capital expenditures. For the Lisichansk to Kremenchug pipeline, the increase was 11.3 percent, with increased metal consumption of 8,000 tons and 4.75 million rubles more in capital expenditures.

Today, coordination of the route which the pipeline is to follow with land users takes up the longest period of time during its planning. Despite the fact that the computer makes its calculations impartially and with the greatest degree of accuracy, the users of land (as a rule, there are usually over 100 of them involved; in the case of the ammonia pipeline it was over 400) do not always have an objective approach to resolving problems connected with pipeline route selection.

There can be no argument about it: land is our most precious possession. No one is to be allowed to ruin it without purpose. And often, principles of a solicitous attitude towards land are not considered at all in these coordinations. Often, the coordinators simply do not want any extra fuss over construction, no matter how necessary it may be to the state.

Analysis turns up one more fact: an increase in the length of pipe trunklines in many instances is explained by the fact that land users frequently proceed from an incorrect interpretation of Article 10 of the "Fundamentals of Land Legislation for the USSR and Union Republics," adopted by the USSR Supreme Soviet in 1968. This article covers the allocation of land either not intended for agricultural purposes or unsuitable for agriculture or of arable land of poor quality for permanent (constant) use in construction of installations of productive significance. Nothing is said here at all, let us note, of the construction of pipelines.

Considering the fact that, in the latter case, the allocation of land bears a temporary character (only for the period of construction) and that, following the laying down of the pipe, there follows the obligatory recultivation of fertile layers of soil, with the land being returned to its

owners, a decision befitting those conclusions has been reached. That decision makes clear the possibility of allocation, this for short-term temporary utilization for construction of major underground pipelines, along with land of non-agricultural significance or or arable land of poor quality, other land of agricultural significance as well.

However, as experience has demonstrated, not all of our leaders know of these instructions and are guided by them.

It seems to me that the designing of major pipe trunklines should be concentrated only in specialized design institutes, institutes which have a particular right to do so, with the right derived from ministries and confirmed by the USSR Gosstroy. There should be added to the obligations of project chief engineers the responsibility for inserting in the portion on the pipeline itself the notation that the route for it was selected on the basis that it is the optimal route and that it was chosen in accordance with the proper methodology. Land users should be given a specific time period (on the order of 1 month) in which to review design materials covering the pipeline route section.

Conflict situations should be resolved by the corresponding rayon and oblast Soviet executive committees and by the Councils of Ministers of Union Republics strictly on schedule. Coordination of the routes to be followed by pipelines should be resolved within an established period of time; this schedule should not be disrupted either by land users or by design organizations either. Any changes in the conditions of agreement should be made jointly by design organizations and the users of land. The agreement, as issued, should be kept under strict control, to exclude allocation of one and the same parcels of land to another construction project.

It occurs to us, also, that it might be expedient to issue a single document, which would then be binding upon all organizations regardless of their departmental subordination. Such a document should cite the appropriate legislation on this question. Included in it, also, should be the grounds which served as the basis for determining the rational design route of major trunk pipelines.

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CSO: 1822

FUELS

GIANT COKE BATTERY PUT INTO OPERATION

Kiev RABOCHAYA GAZETA in Russian 19 Feb 80 p 1

[Article by I. Veretel'nik, editor of the DNEPROVSKIY METALLURG, plant newspaper of the "Zaporozhstal'" Plant, and T. Grebinyuk, editor of the KOKSOKHIMIK ZAPORIZHZHYA, plant newspaper of the Zaporozh'ye Coke-Chemical Plant: "The Giant Coke Battery Has Produced Its First Coke"]

[Text] So the day finally came, the day for which the builders, the coke-chemists and the metallurgists had been waiting with impatience. The Zaporozh'ye giant coke battery with its capacity of one million tons of coke a year has produced its first tons of this metallurgical raw material, raw material which has already been transported and handed over to furnace operators at the Zaporozh'ye Steel Plant--to their colleagues in this complex competition between neighbors. The coke produced by the new battery will assist the rhythmic work of the steel makers of Zaporozh'ye.

A meeting of celebration was held to mark this auspicious occasion. Its participants were the grandchildren of the people who, in the 1930's, built the first coke batteries out on the steppes of Zaporozh'ye and the sons of the labor heroes of the restoration of the industrial complex in the period after the war. It was they who told us, with feeling, of what had been accomplished by them over a comparatively short period. A great deal has indeed been done. Used on all installations of this complex were 12,000 cubic meters of monolithic and 7,000 cubic meters of pre-fabricated reinforced concrete plus 21,000 tons of refractory brick; 240,000 cubic meters of earth were moved from the industrial site during the laying down of foundations; and 4,200 tons of technological equipment was installed.

Taking part in this work and doing that work in a highly-productive manner befitting "shock" brigades were the collectives of brigades led by G. I. Podkova, A. M. Batsanskiy, I. F. Burakov, V. Z. Seroshtan, G. I. Klimenchuk and V. P. Bednyy of the "Zaporozhstroy" Trust, those led by A. A. Pirlik, V. N. Smirnov and V. Ye. Gorislavskiy of the "Koksokhimteplomontazh" Trust, of the brigade of installation workers from the "Metallurgmontazh" Trust headed by L. I. Khrushch, and others.

Among the particpants in this meeting of celebration were plant workers, the owners of this mighty coke battery. Upwards it sprang majestically, with the old coke batteries discreetly nestled up against it. These old batteries have outlived their usefulness and are scheduled to be razed this year in order to make way for the erection of yet another such giant coke battery.

The coke-chemists devoted a great deal of effort and energy in the construction of Battery Number 1. The victory was not attained easily. But the most important thing is that they have acquired experience in large-scale construction, something which will be a benefit to them in the future. Already, the plant's workers are preparing themselves for a new stage in the reconstruction of their enterprise--erection of a second giant coke battery.

While the construction workers toiled, the training of people to operate the new aggregate was going on. To the new site came the pick of the best workers, people who had won the right to work at the new battery through socialist competition.

At 1510 hours on Saturday, loading equipment operators Mikhail Goncherenko and Ivan Nos began the loading of the new battery. Within 24 hours, the brigade led by foreman Vasiliy Vereshchaki was taking out the first coke produced. Already sent on to the furnace operators in Zaporozh'ye was 750 tons of this valuable metallurgical raw material.

This was the occasion for the holding of a meeting yesterday, a meeting which was opened by party committee secretary A. S. Sychev of the "Zaporozhstroy" Trust. The construction chief of the complex, Yu. M. Cherkasov, handed a symbolic key to the battery to plant director N. Ye. Yeshchenko. Secretary V. V. Adzerikho of the Zaporozhskaya Oblast Party Committee heartily congratulated the construction workers upon their successful effort, which they have dedicated to the 110th Anniversary of the birth of V. I. Lenin.

The meeting's participants sent reports both to CPSU Central Committee General Secretary and Chairman of the Presidium of the Supreme Soviet L. I. Brezhnev as well as to the Central Committee of the Ukrainian Communist Party.

First success...one wishes for it to be embodied in the daily work of the coke-chemists of Zaporozh'ye. For they have taken on an obligation to reach the planned capacity of the new battery 1 month ahead of schedule. It is now a matter of honor for them to adhere to this program. This is something which is being expected of them not only by the metallurgists of the "Zaporozhstal'" Plant but by other plants of the republic as well.

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END

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27 May 1980

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